THE WEATHER OF THE MONTH.

By ALFRED J. HENRY, Professor of Meteorology.

The weather for April, 1900, was abnormal in several respects. The precipitation in the Gulf States, on the Plains south of, and including Nebraska, in Colorado, Wyoming, Utah, and Nevada was unusually heavy. Indeed, more rain fell in eastern Colorado in the single month of April than generally falls in twelve months. Much of the precipitation in the mountainous portions of Colorado and Wyoming was in the form of snow, which, however, largely disappeared before the end of the month.

Severe and destructive floods occurred in several of the Gulf States, as recorded elsewhere in this REVIEW. In the Lake region fine weather prevailed for the most part.

The month was free from destructive storms although minor tornadoes occurred in several States. Thunderstorms were more numerous than for the corresponding month in 1899.

Interlake navigation opened on the 18th, and boats reached the head of Lake Superior by the 22d, about a week earlier than last season. At the opening of navigation on Lake Superior there was considerable field ice at both ends of the lake. The fields in the western end had disappeared by the 30th, but broken fields still remained in the eastern portions of the lake at the end of the month. Considerable field ice also remained in the eastern portion of Lake Erie at the close of the month.

PRESSURE.

Monthly mean pressure was highest (30.05) over the Lake region and the North Pacific coast, respectively, and lowest over Arizona, New Mexico, and the southern portions of Utah and Nevada. The pressure was relatively high over the South Atlantic coast, but not so high as in the Lake region. There was a general diminution of pressure, not only on the South Atlantic coast, but also in the West Indies and over the Atlantic, as indicated by the Bermuda report. The persistence of areas of high pressure in the Lake region had an important bearing upon the weather, not only in that locality but elsewhere, especially to the southwest. The heavy precipitation in Texas, eastern Colorado, and elsewhere throughout the southwest was due, in a great measure, to the presence and persistence of areas of high pressure in the Lake region and along the northern boundary west of the ninety-fifth meridian.

The cloudiness within the regions of heavy rains and snows was naturally excessive, while that of the Lake region was comparatively light.

TEMPERATURE OF THE AIR.

The distribution of monthly mean surface temperature, as deduced from the records of about 1,000 stations, is shown on Chart VI.

Temperature was above the normal north of a line extending from the Florida coast to the coasts of Washington and Oregon. In the center of the continent, as at Winnipeg, the average daily excess of temperature above normal was 12°. This amount diminished fairly uniformly to the southward and also to the eastward and westward to both oceans.

The greatest negative departures were recorded in southeastern California and southern Arizona.

It is to be noted in this connection that temperature was markedly above normal in the Lake region where, as we have just seen, the prevailing pressure was also above the normal for the season. We are accustomed to associate the advance of an area of high pressure with a fall in temperature. Evidently a predominance of highs does not necessarily mean a diminution in seasonal temperature averages.

In Canada.—Prof. R. F. Stupart says:

The temperature was above average in all portions of Canada. It was as much as 12° above in Manitoba, and from 4° to 11° in the Northwest Territories. In British Columbia it was in excess of the average from 3° to 6°, in Ontario from 2° to 6°, and in Quebec from 1° to 4°, while in the Maritime Provinces it was from average to 3° above.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	10	45.3	+ 2.0	+ 2.7	+ 0.7
Middle Atlantic	12	52.0	+ 1.4	— 0.4	— 0.1
South Atlantic	10	62.6	+ 0.6	— 4.6	— 1.2
Florida Peninsula	7	71.0	0.0	— 6.7	— 1.7
East Gulf	7	66.0	— 0.4	— 7.9	— 2.0
West Gulf	7	66.1	— 0.9	— 0.5	— 0.1
Ohio Valley and Tennessee	12	56.3	+ 0.4	— 4.7	— 1.2
Lower Lake	8	46.6	+ 1.9	— 3.7	— 0.9
Upper Lake	9	44.6	+ 4.4	+ 3.3	+ 0.8
North Dakota	8	50.3	+ 8.5	+19.9	+ 5.0
Upper Mississippi Valley	11	54.3	+ 3.1	+ 2.3	+ 0.6
Missouri Valley	10	54.7	+ 3.7	+10.1	+ 2.5
Northern Slope	7	47.6	+ 2.9	+18.4	+ 4.6
Middle Slope	6	53.3	— 0.8	+ 8.0	+ 2.0
Southern Slope	6	58.8	— 2.3	+ 3.6	+ 0.9
Southern Plateau	15	52.0	— 4.1	+ 9.4	+ 2.4
Middle Plateau	9	45.9	— 1.7	+17.1	+ 4.3
Northern Plateau	10	47.8	— 1.4	+17.2	+ 4.3
North Pacific	9	50.1	+ 1.1	+12.9	+ 3.2
Middle Pacific	5	54.7	— 0.7	+ 6.5	+ 1.6
South Pacific	4	56.5	— 2.2	+ 8.1	+ 2.0

PRECIPITATION.

Unusually heavy rains fell in all of the Gulf States, especially in Texas, also throughout the Plains region northward as far as South Dakota and westward to Nevada. The heavy rains in Mississippi, Alabama, Louisiana, and Texas were the cause of destructive floods in those States, an account of which is given elsewhere in this REVIEW.

The most remarkable rainfall was that of eastern Colorado, where 10 inches or more fell at a number of stations. This is the more extraordinary since the normal annual rainfall of that region is barely 10 inches. The highest annual rainfall ever known at Las Animas was nearly 16 inches, while the total fall for April, 1900, was 7.54 inches. The least annual rainfall ever known at the same station was as low as 4 inches, or about half of that for the current month.

The excessive rainfalls were due in a large measure to the fact that several low area storms moved northeastward from western Texas and New Mexico at a very slow rate. One storm in particular advanced less than 400 miles in forty-eight hours, rain and snow, mixed, falling continuously over large portions of Colorado and surrounding States.

Less than the normal amount of rain fell in the Ohio Valley, Middle Atlantic States, the Lake region, and the upper Mississippi and Missouri valleys. The rainfall of the North Pacific coast was likewise considerably below the normal amount. East of the Rocky Mountains the snowfall was very light. In eastern Colorado and also throughout the mountain regions of that State, as well as Wyoming to the northwest, portions of Utah and Nevada to the westward received on an average 10 inches or more of snow during the month.

In Canada.—Professor Stupart says:

The precipitation in the Maritime Provinces was generally above the average, this was especially the case in the eastern part, where at Sydney the excess amounted to 3.8 inches. In all other portions of the Dominion, except in a few isolated localities, the precipitation was below the average. In British Columbia the deficiency at many places was from an inch and a quarter to an inch and a half. At both Winnipeg and Quebec it was an inch and a quarter below the average amount, and in Ontario it varies from a tenth of an inch to a little over an inch. Snow fell heavily in many portions of the Maritime Provinces on several occasions, especially during the last week of the month, but elsewhere in Canada very little snow was recorded and all the snow had disappeared from the ground by the end of the month, except in parts of eastern Quebec and the Maritime Provinces.

Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		*Inches.*	*Inches.*
New England	10	2.55	76	−0.8	+2.1
Middle Atlantic	12	2.36	70	−1.0	−1.7
South Atlantic	10	5.06	146	+1.6	+1.3
Florida Peninsula	7	3.90	170	+1.6	+6.5
East Gulf	7	8.10	184	+3.7	+3.9
West Gulf	7	5.01	131	+1.2	+0.9
Ohio Valley and Tennessee	12	2.67	66	−1.4	−5.1
Lower Lake	8	1.68	71	−0.7	+0.8
Upper Lake	9	1.65	73	−0.6	−1.7
North Dakota	8	0.93	44	−1.2	−1.7
Upper Mississippi Valley	11	2.04	67	−1.0	−1.5
Missouri Valley	10	3.35	110	+0.3	−0.4
Northern Slope	7	3.83	235	+2.2	+1.6
Middle Slope	6	5.10	255	+3.1	+1.9
Southern Slope	6	4.78	219	+2.6	+2.1
Southern Plateau	15	1.70	340	+1.2	−1.0
Middle Plateau	9	1.75	167	+0.7	−1.5
Northern Plateau	10	1.87	136	+0.5	−1.2
North Pacific	9	2.34	52	−2.2	−3.7
Middle Pacific	5	2.52	96	−0.1	−4.4
South Pacific	4	1.00	71	−0.4	−5.4

HAIL.

The following are the dates on which hail fell in the respective States:

Alabama, 4, 8, 10, 11, 21, 25, 26, 29. Arizona, 2, 4, 5, 6, 7, 9, 10, 14, 15, 16, 17, 23, 25, 26, 27, 28, 29. Arkansas, 10, 13, 15, 26. Colorado, 4, 8, 14, 15, 21, 22, 23, 24, 25, 27, 29. Delaware, 11. Florida, 20. Georgia, 3, 4, 12, 29. Idaho, 3, 7, 12, 14, 15, 21, 22, 25, 26. Illinois, 11, 17. Indiana, 10, 11, 13, 16. Indian Territory, 10, 19, 27. Iowa, 15, 16, 17, 26. Kansas, 2, 3, 4, 9, 15, 16, 17, 19, 22, 24, 25, 26, 28. Kentucky, 10, 21, 26. Louisiana, 10, 11, 12, 15, 16, 17, 22. Maryland, 22, 30. Massachusetts, 24. Michigan, 2, 3, 11. Minnesota, 26, 27. Mississippi, 8, 10, 11, 15, 16, 17. Missouri, 1, 3, 8, 9, 10, 15, 16, 24, 25, 26, 27. Montana, 3, 24. Nebraska, 9, 10, 22, 23, 24, 25, 26, 27, 28. Nevada, 2, 7, 21, 25, 26, 27, 28, 29, 30. New Hampshire, 28. New Mexico, 4, 5, 8, 14, 15, 27, 28. New York, 3, 11, 12, 22. North Carolina, 4, 12, 13, 21, 25, 26. North Dakota, 25, 27. Ohio, 9, 11, 18, 22, 24. Oklahoma, 3, 4, 9, 10, 15, 18, 19, 21, 22, 23, 24, 25, 27. Pennsylvania 12, 22. South Dakota, 23, 24, 25, 26, 27. Tennessee, 3, 11, 25, 26, 27. Texas, 9, 16, 18, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30. Utah, 3, 8, 9, 16, 22, 23, 24, 25, 26, 27, 28. Virginia, 4, 10, 11, 12, 22. Washington, 6, 7, 20, 22, 25. West Virginia, 2. Wyoming, 3, 8, 22, 24, 26, 27, 29, 30.

SLEET.

The following are the dates on which sleet fell in the respective States:

Arkansas, 11. Colorado, 4, 6, 8, 15. Connecticut, 12. District of Columbia, 11. Georgia, 12. Idaho, 2, 8, 26. Illinois, 9, 10, 11. Indiana, 9, 10, 11, 13, 14. Iowa, 11. Kansas, 9, 10, 11. Maine, 24, 26, 27, 28. Maryland, 4, 11, 12. Massachusetts, 12, 24, 28. Michigan, 3, 11, 21. Missouri, 10, 11. Nebraska, 10, 17. Nevada, 7. New Hampshire, 12. New Jersey, 11, 13. New Mexico, 4, 5, 21, 24, 28. New York, 13. Ohio, 2, 9, 10, 11, 22. Oregon, 8, 25, 26. Pennsylvania, 11, 12. Utah, 4, 14, 21, 22, 23, 24, 25, 26, 27, 28, 29. Virginia, 5, 11. Washington, 7, 8. West Virginia, 2. Wisconsin, 11, 13.

SUNSHINE AND CLOUDINESS.

The distribution of sunshine is graphically shown on Chart VII, and the numerical values of average daylight cloudiness, both for individual stations and by geographical districts, appear in Table I.

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	5.3	0.0	Missouri Valley	6.0	+0.6
Middle Atlantic	4.9	−0.3	Northern Slope	5.6	+0.2
South Atlantic	4.8	+0.4	Middle Slope	6.0	+1.6
Florida Peninsula	4.6	+0.7	Southern Slope	4.8	+0.6
East Gulf	5.1	+0.6	Southern Plateau	3.2	+0.9
West Gulf	5.8	+0.6	Middle Plateau	6.7	+2.2
Ohio Valley and Tennessee	4.9	−0.4	Northern Plateau	6.3	0.0
Lower Lake	5.0	−0.5	North Pacific Coast	5.6	−0.9
Upper Lake	5.3	−0.4	Middle Pacific Coast	4.3	−0.3
North Dakota	3.8	−1.7	South Pacific Coast	3.9	0.0
Upper Mississippi	5.1	−0.4			

HUMIDITY.

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
	%			%	
New England	71	− 1	Missouri Valley	63	− 2
Middle Atlantic	63	− 4	Northern Slope	67	+10
South Atlantic	72	0	Middle Slope	69	+14
Florida Peninsula	78	+ 3	Southern Slope	66	+13
East Gulf	73	+ 1	Southern Plateau	38	+ 8
West Gulf	76	+ 4	Middle Plateau	53	+ 9
Ohio Valley and Tennessee	64	0	Northern Plateau	68	+ 8
Lower Lake	69	− 1	North Pacific Coast	74	− 5
Upper Lake	72	− 2	Middle Pacific Coast	70	− 4
North Dakota	60	− 8	South Pacific Coast	70	+ 1
Upper Mississippi	66	+ 1			

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table VII, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

Thunderstorms.—Reports of 2,617 thunderstorms were received during the current month as against 1,962 in 1899 and 740 during the preceding month.

The dates on which the number of reports of thunderstorms for the whole country were most numerous were: 22d, 200; 26th and 27th, 172; 25th, 150.

Reports were most numerous from: Kansas, 166; Texas, 163; Nebraska, 147; Louisiana, 146.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, 10th to 18th.

The greatest number of reports were received for the following dates: 30th, 149; 4th and 29th, 3.

Reports were most numerous from: Minnesota, 11; Michigan and South Dakota, 7; North Dakota, 6.

In Canada.—Auroras were reported as follows: Quebec, 4th; Kingston, 30th; Minnedosa, 1st, 4th, 9th, 10th, 28th, 30th; Medicine Hat, 4th and 30th; Prince Albert, 22d, 27th, 30th.

Thunderstorms were reported as follows: Grand Manan, 19th; Charlottetown, 19th; Toronto, 18th; Minnedosa, 26th, 27th; Qu'Appelle, 25th; Banff, 3d; Battleford, 23d, 25th; Hamilton, Bermuda, 5th.

WIND.

The maximum wind velocity at each Weather Bureau station for a period of five minutes is given in Table I, which also gives the altitude of Weather Bureau anemometers above ground.

Following are the velocities of 50 miles and over per hour registered during the month:

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Amarillo, Tex	4	64	e.	Mount Tamalpais, Cal.	3	56	nw.
Do.	5	58	se.	Do.	6	75	nw.
Do.	10	60	n.	Do.	7	61	nw.
Do.	11	58	n.	Do.	12	60	nw.
Cape Henry, Va.	5	50	n.	Do.	13	59	nw.
Denver, Colo	3	52	se.	Do.	22	71	nw.
El Paso, Tex	8	50	sw.	Do.	25	52	n.
Do.	14	54	sw.	Do.	27	52	n.
Hatteras, N. C.	4	54	nw.	New York, N. Y.	3	52	w.
Independence, Cal.	2	52	w.	Do.	8	63	w.
Memphis, Tenn.	8	55	e.	Do.	26	52	nw.

CORRIGENDUM.

Mr. I. M. Cline requests that the heading of the table of rainfall, on page 147, be corrected by omitting the words "during flood period" and by changing "April 17 to April 7."

DESCRIPTION OF TABLES AND CHARTS.

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For description of tables and charts see page 26 of REVIEW for January, 1900.